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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/708,036	11/08/2000	Mark S. Wight	71493-885	8046

7380 7590 04/19/2004

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EXAMINER	
SCHEIBEL, ROBERT C	
ART UNIT	**PAPER NUMBER**
2666	2

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/708,036	Applicant(s) WIGHT ET AL.	
	Examiner Robert C. Scheibel	Art Unit 2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: on lines 17 and 21-22, "connection engine 20" should be changed to "connection engine 30".

Appropriate correction is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims **1-2, 6-8, 13-16, and 20** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,537,394 to Abe et al.

Regarding claim **1**, Abe discloses the step of representing a topology of the network by a plurality of processing elements in Figure 5. The "node associative neurons" described in lines 30-39 of column 14 are the processing elements. (Nodes in neural networks are commonly referred to as processing elements.) The connection matrix is represented by the status of "link associative neurons" V_{ij} described in 12-35 of

column 15. While Abe does not specifically refer to these values as comprising a matrix, it is clear that link associative neuron i,j can be viewed as representative of element i,j of a matrix representing the connections in the switch in figure 4. The step of supplying queries representing physical problems of the network from a host processor to a topology engine is disclosed in the link or connection request from a user and the subsequent communication process information P transmitted to the routing control section described in lines 52-58 of column 12. The host processor is the combination of the switch and switch controller of figure 4 and the topology engine is the routing control section 70A of figure 4. The user request is transmitted from the switch to the routing control section via the signal processor and the processing information generating section; the selected path is transmitted back to the switch controller from the path selecting section. The step of processing the queries is disclosed in the path selection carried out by the path selecting section 72 of figure 4. The step of supplying responses to the queries from the topology engine to the host processor is disclosed by the path selecting section 72 supplying the switch controller with the selected path as described in lines 19-30 of column 16.

Regarding claim **7**, the step of representing a topology of the network is anticipated by the routing control section 70A of figure 4 and the neural network of figure 5. As above, the processing elements are the "node associative neurons" and the connections between the processing elements are the "link associative neurons" described in lines 30-39 of column 14. The step of supplying a connection search request is disclosed by the connection request described in lines 50-62 of column 12.

The step of communicating information between processing elements of the connection engine to determine a connection path between processing elements of the connection engine representing the start and end network devices is disclosed in lines 40-48 of column 14. This passage describes the propagation of the excitation input through the neural network to determine the path. The step of supplying information identifying the connection path from the connection engine to the host processor is disclosed by the path selecting section 72 supplying the switch controller with the selected path as described in lines 19-30 of column 16.

Regarding claim **15**, the step of representing each network device by a processing element is disclosed in the "node associative neurons" of figure 5 described in lines 30-39 of column 14. The step of representing each connection between the network devices by a respective connection between the processing elements in the "link associative neurons" described in lines 30-39 of column 14. The step of supplying from the host processor to the connection engine information for maintaining a record of connections is disclosed by status information Q of figure 4. The step of supplying from the host processor to the connection engine a search request identifying start and end network devices for a connection is disclosed by the connection request described above and in lines 52-58 of column 12. This passage indicates examples of the information contained in this request (including the destination); this information also must inherently contain the start network device if it can be used to generate a useful communication path. The step of communicating information between processing elements via the connections between the processing elements and in dependence on

the record of connections to determine a connection path is disclosed by lines 40-48 of column 14 as explained above. The step of supplying information identifying the connection path from the connection engine to the host processor is disclosed by the path selecting section 72 supplying the switch controller with the selected path as described in lines 19-30 of column 16.

Regarding claims **2, 8, and 16**, with the parent claims 1, 7, and 15 addressed above, figure 4 shows the routing control section implemented as an individual unit or processor. Thus the processing elements (node associative neurons) are different instances constituting respective ones of the processing elements and the number of processors is smaller than the number of network devices.

Regarding claim **13**, with the parent claim 7 addressed above, the step of supplying from the host processor to the connection engine information for maintaining a record of connections in the network is disclosed by status information Q of figure 4.

Regarding claims **6, 14, and 20**, with the parent claims 1, 7, and 15 addressed above, the connection engine is the routing control section 70A of Figure 4. As indicated above, the processing elements are the "node associative neurons" described in lines 30-39 of column 14. The connection matrix is represented by the status of "link associative neurons" V_{ij} described in 12-35 of column 15. While Abe does not specifically refer to these values as comprising a matrix, it is clear that link associative neuron i,j can be viewed as representative of element i,j of a matrix representing the connections in the switch in figure 4.

5. Claims **1, 3-7, 9-15, and 17-20** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,323,394 to Perlman.

Regarding claim **1**, Perlman discloses the step of representing a topology of the network by a plurality of processing elements in the bridges and end devices of Figure 1. As indicated by the applicant from line 27 of page 22 through line 6 of page 23, the processing elements can be "incorporated into" the network devices they represent; thus the processing elements and network devices are the bridges and end devices of figure 1. The connection matrix is the collective set of connections between the bridges. The step of supplying queries representing physical problems of the network from a host processor to a topology engine is disclosed in the "explorer messages" described from line 53 of column 5 through line 12 of column 6. The host processor is the bridge directly connected to the LAN containing end system seeking to locate a route to another end station. The step of processing the queries is disclosed by the processing performed by the bridges as described in Figure 2 as well as the path selection performed in the destination end station as described from line 67 of column 5 through line 6 of column 6. The step of supplying responses to the queries from the topology engine to the host processor is disclosed by the acknowledgement message containing the route that is sent from the destination end station to the source end station as described in lines 6-12 of column 6.

Regarding claim **7**, the step of representing a topology of the network is anticipated in the bridges and end devices of Figure 1. As indicated by the applicant from line 27 of page 22 through line 6 of page 23, the processing elements can be

"incorporated into" the network devices they represent; thus the processing elements and network devices are the bridges and end devices of figure 1. The step of supplying a connection search request is disclosed by the "explorer messages" described from line 53 of column 5 through line 12 of column 6. The step of communicating information between processing elements of the connection engine to determine a connection path between processing elements of the connection engine representing the start and end network devices is disclosed by the transmission of the explorer message described in the passage from line 53 of column 5 through line 12 of column 6. The step of supplying information identifying the connection path from the connection engine to the host processor is disclosed by the acknowledgement message containing the route that is sent from the destination end station to the source end station as described in lines 6-12 of column 6.

Regarding claim **15**, the bridges and end devices of Figure 1 of Perlman disclose the step of representing each network device by a processing element, as discussed above. The step of representing each connection between the network devices by a respective connection between the processing elements is disclosed by the connections between the bridges and end devices in Figure 1. As mentioned above, the applicant from line 27 of page 22 through line 6 of page 23, the processing elements can be "incorporated into" the network devices they represent. The step of supplying from the host processor to the connection engine information for maintaining a record of connections is disclosed by the routing messages described in lines 8-18 of column 21. The step of supplying from the host processor to the connection engine a search

request identifying start and end network devices for a connection is disclosed by the "explorer messages" described from line 53 of column 5 through line 12 of column 6. As indicated in lines 11-18 of column 2, this explorer message identifies the start and end network devices of the connection. The step of communicating information between processing elements via the connections between the processing elements and in dependence on the record of connections to determine a connection path is disclosed by the transmission of the explorer message described in the passage from line 53 of column 5 through line 12 of column 6. The step of supplying information identifying the connection path from the connection engine to the host processor is disclosed by the acknowledgement message containing the route that is sent from the destination end station to the source end station as described in lines 6-12 of column 6.

Regarding claim **3**, each processing element has a respective address; the end systems have the addresses included in the explorer messages discussed above and the bridges have unique IDs as discussed in lines 7-9 of column 9. It is clear from the rejection of the parent claim above that the queries (explorer messages) and responses (acknowledgements) are transmitted in the form of packets and that the step of processing the queries comprises communicating these packets between the processing elements.

Regarding claim **4**, the limitation of providing said information stored in the processing elements from the host processor is disclosed in the information transmitted in the routing messages (described above) which are transmitted by the host processor (the bridge attached to the LAN of the source end systems.)

Regarding claim **5**, as indicated in Figure 10B, the routing message includes address information (the bridge ID) as well as another parameter (the cost) associated with the connection. This anticipates the limitation of the information stored in the processing elements comprising the address of each other processing element to which is it connected as well as at least one parameter associated with the connection.

Regarding claims **9 and 17**, each processing element has an address; the end systems have the addresses included in the explorer messages discussed above and the bridges have unique IDs as discussed in lines 7-9 of column 9. The connections between the processing elements are constituted by packet communications as is clear throughout the document and in Figure 1.

Regarding claim **10**, the limitation that the connection search request comprises a connection search packet addressed to the processing element of the connection engine representing the start device is anticipated by lines 11-15 of column 2 which indicates that the explorer message indicates the source end system.

Regarding claim **11**, the limitation that the step of communicating comprises propagating connection search packets between processing elements, where these propagated packets are supplemented with the addresses of the processing elements via which they are propagated until at least one reaches the destination, is anticipated by the description of the way the explorer messages traverse the bridges from line 53 of column 5 through line 12 of column 6.

Regarding claim **12**, the limitation that the connection path information is supplied to the host processor in a packet from the destination processing element is anticipated by the acknowledgement message of lines 6-12 of column 6.

Regarding claim **18**, the limitation that the connection search request comprises a connection search packet addressed to the processing element of the connection engine representing the start device is anticipated by lines 11-15 of column 2 which indicates that the explorer message indicates the source end system. In addition, the limitation that the connection path information is supplied to the host processor in a packet from the destination processing element is anticipated by the acknowledgement message of lines 6-12 of column 6.

Regarding claim **19**, the limitation that the step of communicating comprises propagating connection search packets between processing elements, where these propagated packets are supplemented with the addresses of the processing elements via which they are propagated until at least one reaches the destination, is anticipated by the description of the way the explorer messages traverse the bridges from line 53 of column 5 through line 12 of column 6.

Regarding claims **6, 14, and 20**, the topology engine of claim 6 and the connection engine of claims 14 and 20 are anticipated by the processing elements in the bridges and end systems of Figure 1.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,442,147 to Mauger et al discloses a method of using a virtual model of a satellite network to better manage connections in non-geostationary satellite constellations. U.S. Patent 6,130,875 to Doshi, et al teaches a method for precomputing paths in a network that is a hybrid centralized/distributed method. U.S. Patent 6,339,587 to Mishra, U.S. Patent 6,067,572 to Jensen et al, and U.S. 6,223,149 to Margulis et al all teach methods of path selection using a model of the network. U.S. Patent 5,561,790 to Fusaro, U.S. Patent 5,263,121 to Melsa et al, U.S. Patent 6,044,075 to Le Boudec et al, U.S. Patent Application Publication 2002/0015386 to Kajiwara, U.S. Patent 6,137,782 to Sharon et al, U.S. 6,256,295 to Callon, and U.S. Patent 3,735,109 to Berthelemy et al all teach methods of path selection in communications networks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert C. Scheibel whose telephone number is 703-305-9062. The examiner can normally be reached on 6:30-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached on 703-308-5463. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RCS 4-15-04
Robert C. Scheibel
Examiner
Art Unit 2666

Seema S. Rao 4/15/04
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